WHAT IS CLAIMED IS:

1. A method of calculating a blocking potential parameter for a potential working path in a communications network, the path being comprised of plural links, the method comprising the steps of adding up a cost assigned to each link to form a first cost and adding up the total bandwidth of other communications paths which share resources with said potential working path to form a second cost.

2. A method comprising performing the method of claim 1 with respect to plural potential working paths, and discarding some of said plural working paths as inferior to leave a set of candidate working paths.

3. The method of claim 2 wherein a potential working path is deemed inferior to a second path if both the sum of the cost assigned to each link in the potential working path and said blocking potential are both less than said cost assigned to each link and said blocking potential for said second path.

4. The method of claim 2 further comprising the step of combining the first and second costs to form a third cost.

5. The method of claim 4 further comprising the step of calculating a protection path for each candidate-working path.

6. The method of claim 5 further comprising the step calculating a cost for each protection path.

7. The method of claim 6 further comprising the step of calculating a combined cost of said working path and said protection path.

8. A method of provisioning working and protection paths from a source node to a destination node in a network, the network being comprised of plural links, each of said links

having an associated capacity, the network having previously provisioned working paths and protection paths, the network also comprising plurality of nodes that are interconnected by the links, the nodes having neighbors, the method comprising the steps of:

a. calculating a cost of each working path from said source node to each neighbor of said source node to achieve a set of candidate paths from said source to each of said neighbors, the set of neighbors constituting initially a frontier;

b. pruning said set of candidate paths by removing inferior paths;

c. for each node in the frontier or added to the frontier, calculating a cost working paths from said source node to each neighbor of said each node in the frontier and supplementing said candidate paths by adding to said candidate paths any of said working paths calculated in this step c that are less costly than candidate working paths from said source node to said neighbor of said node for which a cost has already been calculated, and discarding any candidate paths to said neighbor of said node that are inferior;

d. adding all neighbors of said node for which a candidate path is calculated to the frontier;

e. when step c has been executed for each node in the frontier, selecting an optimal working path.

9. The method of claim 8 wherein said step a of calculating includes the step of calculating at least two values associated with each path.

10. The method of claim 9 wherein at least one of said values is comprised of a blocking potential, representing the sum of bandwidths protected by the SRLG's that a candidate working path belongs to, and wherein an SRLG is a set of links that may fail based upon a single network fault.

11. The method of claim 8 wherein step e comprises the steps of selecting a protection path for each of said candidate working paths, assigning a protection cost to each protection path, and calculating a combined cost by combining a cost of said protection path with a cost of said each candidate working path.

12. The method of claim 11 wherein the protection paths are calculated using Dyjkstra's algorithm.

13. The method of claim 11 wherein protection paths are assigned a cost that accounts for the sharing of protection paths.